Emission Estimates

Date: 01-Jul-04

Location: Art & Museum Building #28

				EMISS	ON ESTIMATES		. 7
		Maximum Equipment Capacity	Emission I	Factors from EPA 42	:	following esti based on Emissio	
EMISSIONS	Fuel		Reference Table		calculated	calculated	calculated
		MMBtu/hr					
1	Gas	0.100		toa *0 r _u df	ib _e /MM8tu	lb _e /hr	ton _e /yr
(col			EPA 42 Table 1.4-1	84	0.082	8.24 E-03	3.61 E-02
NOx		l I .	EPA 42 Table 1.4-1	100	0.098	9.80 E-03	4.29 E-02
\$O ₂		ı	EPA 42 Table 1.4-2	0.60	0.00059	5.88 E-05	2.58 E-04
PM10		1	EPA 42 Table 1.4-2	7.60	0.0075 0.0075	7.45 E-04	3.26 E-03
PM Pb		l	EPA 42 Table 1.4-2 EPA 42 Table 1.4-2	7.60 0.0005	4.90 E-07	7.45 E-04 4.90 E-08	3.26 E-03 2.15 E-07
voci		1	EPA 42 Table 1.4-2	5.50	0.005	5.39 E-04	2.36 E-03
TOC		!	EPA 42 Table 1.4-2	11.00	0.011	1.08 E-03	4.72 E-03
2-Methylnaphthalene		[EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	2.35 E-09	1.03 E-08
3-Methylchloranthrene		l i	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
7,12-Dimethylbenz(a)anthracite			EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	1.57 E-09	6.87 E-09
Acenephthene		i i	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.78 €-10	7.73 E-10
Acenaphthylene Anthracene		l 1	EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	1.8 E-06 2.4 E-06	1.78 E-09 2.35 E-09	1.76 E-10 2.35 E-10	7,73 E-10 1,03 E-09
Araenio		l !	EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	1.98 E-08	8.59 E-08
Barlum		í I	EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	4.31 E-07	1.89 E-06
Benzo(a)anthracene		l 1	EPA 42 Table 1.4-3	1.8 E-06	1.78 E-09	1.76 E-10	7.73 E-10
Benzene		1	EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	2.06 E-07	9.02 E-07
Benzo(a)pyrene		! !	EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.18 E-10	5.15 E-10
Benzo(b)fluoranthene		l l	EPA 42 Table 1.4-3	1.8 E-06	1.75 E-09	1.76 E-10	7.73 E-10
Benzo(g,h,t)perylene		1 1	EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.18 E-10	5.15 E-10
Benzo(k)fluoranthene		i I	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09 1.18 E-08	1.76 E-10 1.18 E-09	7.73 E-10 5.15 E-09
Beryllium Butene		1	EPA 42 Table 1.4-4 EPA 42 Table 1.4-3	1.2 E-05 2.1 E+00	2.06 E-03	2.06 E-04	9.02 E-04
Cadmium		1	EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	1.08 E-07	4.72 E-07
Chromium		! !	EPA 42 Table 1.4-4	1.4 E-03	1,37 E-06	1.37 E-07	6.01 E-07
Chrysene		1 1	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.78 E-10	7.73 E-10
Cobatt			EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	8.24 E-09	3.61 E-08
Copper		1 ì	EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	8.33 E-08	3.65 E-07
Dibenzo(s,h)anthracene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.18 E-10	5.15 E-10
Dichlorobenzene Ethane			EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	1.2 E-03 3.1 E+00	1.18 E-06 3.04 E-03	1.18 E-07 3.04 E-04	5.15 E-07
Fluoranthenel		1	EPA 42 Table 1.4-3	3.1 E+00 3.0 E-06	3.04 E-03 2.94 E-09	3.04 E-04 2.94 E-10	1.33 E-03 1.29 E-09
Fluoranthene		1	EPA 42 Table 1.4-3	2.8 E-06	2.75 E-09	2.75 E-10	1.20 E-09
Formaldehyde		ì Ì	EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	7.35 E-06	3.22 E-05
Hexane		I I	EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	1.76 E-04	7.73 E-04
Indeno(1,2,3-od)pyrene		, ,	EPA 42 Table 1.4-3	1.8 E-08	1.76 E-09	1.76 E-10	7.73 E-10
Manganese		1	EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	3.73 E-08	1.63 E-07
Mercury			EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07 0.00225	2.55 E-08	1.12 E-07
Methane Molybdenum		1 1	EPA 42 Table 1.4-2 EPA 42 Table 1.4-4	2.30 1.1 E-03	1.08 E-06	2.25 E-04 1.08 E-07	9.88 E-04 4.72 E-07
Naphthaiene		i i	EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	5.98 F-08	2.62 E-07
Nickel		1	EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	2.06 E-07	9.02 E-07
Pentane		1	EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	2.55 E-04	1.12 E-03
Phenanathrene		1 1	EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	1.67 E-09	7.30 E-09
Propane		1 1	EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	1.57 E-04	6.87 E-04
Pyrene		1	EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	4.90 E-10	2.15 E-09
Selenium		}	EPA 42 Table 1.4-4	2.4 E-05	2.36 E-08	2.35 E-09	1.03 E-08
Toluene Vanadium			EPA 42 Table 1.4-3 EPA 42 Table 1.4-4	3.4 E-03 2.3 E-03	3.33 E-06 2.25 E-06	3.33 E-07 2.25 E-07	1.48 E-06 9.88 E-07
Vanadium		1 1	EPA 42 Table 1.4-4	2.9 E-02	2.25 E-06	2.25 E-07 2.84 E-08	9.88 E-07 1.25 E-05
Zine		·	CMA 42 19010 1.4-4	5.9 E-05	2.84 E-05	2.84 E-06	1.25 E-05

8,760 hours/year 30 hours/year

- | This sign of factor for "Small Bollers" and "Uncontrolled".
 | Potential hours of operation (annual) = 3 Actual hours of operation = 4 Kilin used for foundry classes. | Identifier #K24.

Abbreviations used::

MMBtu Million Btu
hr Hours
yr Years
Ibs Pounds of emissions
tong Tons of emissions

Emissions ISU Small Equip 6/24/2003 K24 1 of 1 @2.57PM Syed

Item #25: Burnoff Furnace

Emission Estimates

Date: 01-Jul-04

Location: Art & Museum Building #28

				EMISS	ON ESTIMATES			
j		Maximum Equipment Capacity	Emission F	setors from EPA 42	:	following estimates based on Emission Factors		
EMISSIONS	Fuel	1	Reference Table		calculated	calculated	calculated	
EMISSIONS	Fuel		Vetelaude 1971s		Calculated	DECUMEN	CERCUIETEG	
		MM Btu/hr						
	Gas	0.200	EPA 42 Table 1.4-1	lb _e /10 ⁴ sof 84	0.082	#b _e /hr 1.65 E-02	ton _e /yr 7.21 E-02	
KO.	1	1 1	EPA 42 Table 1.4-1	100	0.098	1.96 E-02	8.59 E-02	
so.			EPA 42 Table 1.4-2	0.60	0.00059	1.18 E-04	5.15 E-04	
PM10			EPA 42 Table 1.4-2	7.80	0.0075	1.49 E-03	6.53 E-03	
PM			EPA 42 Table 1.4-2	7.60	0.0075	1.49 E-03	6.53 E-03	
Pb			EPA 42 Table 1.4-2	0.0005	4.90 E-07	9.80 E-08	4.29 E-07	
voc		·	EPA 42 Table 1.4-2	5.50	0.005	1.08 E-03	4.72 E-03	
TÓC			EPA 42 Table 1.4-2	11.00	0.011	2.16 E-03	9.45 E-03	
2-Methylnaphthalene		l	EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	4.71 E-09	2.06 E-08	
3-Methylchloranthrene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	3.53 E-10	1.55 E-09	
7,12-Dimethylbenz(a)anthracite	i		EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	3.14 E-09	1.37 E-08	
Acenaphthene		. I	EPA 42 Table 1.4-3	1.8 E-08	1.76 E-09	3.53 E-10	1.55 E-09	
Agenaphthylene		l	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	3.53 E-10	1.55 E-09	
Anthracene			EPA 42 Table 1.4-3	2.4 E-08	2.35 E-09 1.96 E-07	4.71 E-10 3.92 E-08	2.06 E-09 1.72 E-07	
Areenio		i 1 i	EPA 42 Table 1.4-4 EPA 42 Table 1.4-4	2.0 E-04 4.4 E-03	4.31 E-06	8.63 E-07	3.78 E-06	
Barlum		i i	EPA 42 Table 1.4-4 EPA 42 Table 1.4-3	4.4 E-03 1.8 E-06	1.76 E-09	3.53 E-10	1.55 E-09	
Benzo(a)anthracene Benzona		l (EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	4.12 E-07	1.80 E-08	
Benzo(a)pyrene		l 1	EPA 42 Table 1.4-3	1.2 E-08	1.18 E-09	2.35 E-10	1.03 E-09	
Benzo(b)fluoranthene		! !	EPA 42 Table 1.4-3	1.8 E-08	1.78 E-09	3.53 E-10	1.55 E-09	
Benzo(g,h,l)perylene		1 1	EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	2.35 E-10	1.03 E-09	
Benzo(k)fluoranthene		l 1 i	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	3.53 E-10	1.55 E-09	
Beryltium		l	EPA 42 Table 1.4-4	1.2 E-Q5	1.18 E-08	2.35 E-Q9	1.03 E-08	
Butane]	EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	4.12 E-04	1.80 E-03	
Cadmium			EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	2.16 E-07	9.45 E-07	
Chromium		, ,	EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	2.75 E-07	1.20 E-06	
Chrysene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	3.53 E-10	1.55 E-09	
Cobalt			EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	1.65 E-08	7.21 E-08	
Copper		1 1	EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07 1.15 E-09	1.67 E-07 2.35 E-10	7.30 E-07 1.03 E-09	
Dibenzo(a,h)anthracene			EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	1.2 E-06 1.2 E-03	1.18 E-09	2.35 E-10 2.35 E-07	1.03 E-09 1.03 E-06	
Dichlorobenzene Ethane			EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	8.08 E-04	2.66 E-03	
Fluorenthene		l 1	EPA 42 Table 1.4-3	3.0 E+06	2.94 E-09	5.88 E-10	2.58 E-09	
Fluorantiene			EPA 42 Table 1.4-3	2.8 F-06	2.54 E-09	5.49 E-10	2.40 E-09	
Formaldehyde		1	EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	1.47 E-05	6.44 E-05	
Hexane			EPA 42 Table 1.4-3	1.8 E+00	1.78 E-03	3.53 E-04	1.55 E-03	
Indeno(1,2,3-cd)pyrene		[[EPA 42 Table 1.4-3	1.8 E-06	1.76 €-09	3.53 E-10	1.55 E-09	
Manganese		1	EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	7.45 E-08	3.26 E-07	
Mercury			EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	5.10 E-08	2.23 E-07	
Methana		1	EPA 42 Table 1.4-2	2.30	0.00225	4.51 E-04	1.98 E-03	
Molybdenum		1 1	EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	2.18 E-07	9.45 E-07	
Naphthalene		l	EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	1.20 E-07	5.24 E-07	
Nickel Pentane]]	EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06 2.55 E-03	4.12 E-07 5.10 E-04	1.80 E-06 2.23 E-03	
Pentane Phenanathrena	i		EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	2.6 E+00 1.7 E-05	1.67 E-08	5.10 E-04 3.33 E-09	2.23 E-03 1.46 E-08	
Propane		\ \ \	EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	1.7 E+00 1.8 E+00	1.57 E-08	3.14 E-04	1.46 E-06 1.37 E-03	
Pyrene		1	EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	1.6 E+00 5.0 E-06	1.57 E-03 4.90 E-09	9.80 E-10	1.37 E-03 4.29 E-09	
Selenium			EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	4.71 E-09	2.06 E-08	
Toluene		i i	EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	8.87 E-07	2.92 E-06	
Vanadiumi		1	EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	4.51 E-07	1.98 E-06	
Zine		I I	EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	5.69 E-06	2.49 E-05	

8,760 hours/year 300 hours/year

Notes:

1 Emission factor for "Small Boilers" and "Uncontrolled".

2 Potential hours of operation (annual) =

3 Actual hours of operation =

4 Furnace used for foundry classes.

5 Identifier #F25.

Abbraylations used::

MMBtu Million Btu
hr Hours
yr Years
Ibs Pounds of emissions
tong Tons of emissions

Emissions ISU Small Equip 8/24/2003 F25 1 of 1 @2:57PM Syed

Item #26: Melting furnace

Emission Estimates

Date: 01-Jul-04

Location: Art & Museum Building #28

				EMISS	ON ESTIMATES		
1		Maximum Equipment				following esti	
		Capacity	Emission	Factors from EPA 42		based on Emissio	n Feetors
EMISSIONS	Fuel		Reference Table		calculated	calculated	calculated
- Linguistic							
		MMBtu/hr					
col	Gas	0.100	EPA 42 Table 1.4-1	lb ₂ /10 ⁵ sof 84	1b ₂ /MM 8tu 0.082	lb _e /hr 8.24 E-03	ton _e /y ₁ 3,61 E-02
NO		l	EPA 42 Table 1.4-1	100	860.0	9.80 E-03	4.29 E-02
50 ₁			EPA 42 Table 1.4-2	0.60	0.00059	5.88 E-05	2.58 E-04
PM10		1 1	EPA 42 Table 1.4-2	7.60	0.0075	7.45 E-04	3.26 E-03
PM			EPA 42 Table 1.4-2	7.60	0.0075	7.45 E-04	3.26 E-03
Pb			EPA 42 Table 1.4-2	0.0005	4.90 E-07	4.90 E-08	2.15 E-07
voc			EPA 42 Table 1.4-2	5.50	0.005	5.39 E-04	2.38 E-03
тос		l	EPA 42 Table 1.4-2	11.00	0.011	1.08 E-03	4.72 E-03
2-Methylnaphthalene			EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	2.35 E-09	1.03 E-08
3-Methylchloranthrene		1 1	EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	1.8 E-06 1.8 E-05	1.76 E-09	1.78 E-10 1.57 E-09	7.73 E-10 6.87 E-09
7,12-Dimethylberiz(a)anthracite Acenaphthene	i	[[EPA 42 Table 1.4-3	1.8 E-08	1.57 E-08	1.76 E-10	7.73 E-10
Acenaphthylene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.78 E-10	7.73 E-10
Anthrasene			EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	2.35 E-10	1.03 E-06
Arseniol		1 1	EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	1.96 E-08	8.59 E-08
Barlum		! !	EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	4.31 E-07	1.89 E-06
Benzo(a)anthracene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.78 E-10	7.73 E-10
Benzene		1 1	EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	2.06 E-07	9.02 E-07
Benzo(a)pyrene		1 1	EPA 42 Table 1.4-3	1.2 E-08	1.18 E-09	1.18 E-10	5.15 E-10
Benzo(b)fluoranthene		\ \ \\	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
Benzo(g,h,i)perylene]]	EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.18 E-10	5.15 E-10
Benzo(k)fluoranthene		i i	EPA 42 Table 1.4-3 EPA 42 Table 1.4-4	1.8 E-06 1.2 E-05	1.76 E-09	1.76 E-10 1.18 E-09	7.73 E-10 5.15 E-09
Beryllium Butane]	EPA 42 Table 1.4-3	2.1 E+00	2.05 E-03	2.06 E-04	9.02 E-04
Cadmium			EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	1.08 E-07	4.72 E-07
Chromiumi			EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	1.37 E-07	6.01 E-07
Chrysene			EPA 42 Table 1.4-3	1.8 E-06	1.78 E-09	1.78 E-10	7.73 E-10
Cobalt			EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	8.24 E-09	3.61 E-0
Copper		1	EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	8.33 E-08	3.65 E-07
Dibenzo(s,h)anthracene		l i	EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.18 E-10	5.15 E-10
Dichlorobenzene			EPA 42 Table 1.4-3	1.2 E-03	1.16 E-06	1.18 E-07	5.15 E-07
Ethane			EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	3.04 E-04	1.33 E-03
Fluoranthene			EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	3.0 E-06 2.8 E-06	2.94 E-09 2.75 E-09	2.94 E-10 2.75 E-10	1.29 E-09
Fluorene Formaldehyde)	EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	7.35 E-10	3.22 E-0
Formaldenyde Hexane			EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	1.76 E-04	7.73 E-04
indeno(1,2,3-ed)pyrene		(EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
Manganese		1	EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	3.73 E-08	1.63 E-07
Mercury			EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	2.55 E-08	1.12 E-07
Methane) i	EPA 42 Table 1.4-2	2.30	0.00225	2.25 E-04	9.88 E-04
Molybdenum		1	EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	1.08 E-07	4.72 E-07
Naphthalene		(EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	5.98 E-08	2.62 E-07
Nickel			EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	2.06 E-07	9.02 E-07
Pentane Phonanathrene			EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	2.6 E+00 1.7 E-05	2.55 E-03 1.67 E-08	2.55 E-04 1.67 E-09	1.12 E-03 7.30 E-09
Propane		1	EPA 42 Table 1.4-3	1.7 E-00 1.6 E+00	1.67 E-08	1.57 E-04	6.87 E-04
Pyrene			EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	4.90 E-10	2.15 E-09
Salenium		(EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	2.35 E-09	1.03 E-08
Toluene			EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	3.33 E-07	1.46 E-06
Variadium			EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	2.25 E-07	9.88 E-07
Zine		l l	EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	2.84 E-06	1.25 E-05

8,760 hours/year 100 hours/year

| Less: a factor for "Small Boilers" and "Uncontrolled".
| Potential hours of operation (annual) =
| Actual hours of operation =
| Furnace used for foundry classes. | |

Abbraviations used::

MM8tu Million Btu
hr Hours
yr Years
libe Pounds of emissions
ton₈ Tons of emissions

Item #27: Boiler

Emission Estimates

Date: 01-Jul-04

Location: West Campus - Building #72

				EMISSION	ESTIMATES		
1		Maximum Equipment Capacity	Emission	Factors from EPA 42:	- 1	tollowing esti based on Emissio	
EMIŚSIONŚ	Fuel		Reference Table		calculated	calculated	calculated
		MMBtu/hr			$\overline{}$		
1 1	Gas	0.676		lb _s /10 ⁴ sof	lb _e /MMBtu	lbe/hr	ton _e /yr
co			EPA 42 Table 1,4-1	84	0.082	7.21 E-02	3.16 E-01
NOx		i I	EPA 42 Table 1.4-1	100	0.0059	8.58 E-02 5.15 E-04	3.76 E-01 2.25 E-03
80; PMt0			EPA 42 Table 1.4-2 EPA 42 Table 1.4-2	0.60 7.60	0.00059	6.52 E-03	2.25 E-03 2.86 E-02
PM		1 1	EPA 42 Table 1.4-2	7.60	0.0075	6.52 E-03	2.86 E-02
75			EPA 42 Table 1.4-2	0.0005	4.90 E-07	4.29 E-07	1.88 E-06
l voc		1 1	EPA 42 Table 1.4-2	5.50	0.005	4,72 E-03	2.07 E-02
tocl			EPA 42 Table 1.4-2	11.00	0.011	9.44 E-03	4.13 E-02
2-Methylnaphthalene		1 1	EPA 42 T#ble 1.4-3	2.4 E-05	2.35 E-08	2.06 E-08	9.02 E-08
3-Methylchioranthrene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.54 E-09	6.76 E-09
7,12-Dimethylbenz(a)anthracite			EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	1.6 E-05 1.8 E-06	1.57 E-08 1.76 E-09	1.37 E-08 1.54 E-09	6.01 E-08 6.76 E-09
Acenaphthene Acenaphthylene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.54 E-09	6.76 E-09
Anthracene			EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	2.08 E-09	9.02 E-09
Araenio			EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	1.72 E-07	7.51 E-07
Barium			EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	3.77 E-06	1.65 E-05
Benzo(a)anthracene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.54 E-09	6.76 E-09
enezneB		l I i	EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	1.80 E-06	7.89 E-06
Benzo(a)pyrene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.03 E-09	4.51 E-09
Benzo(b)fluoranthene		[[EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.54 E-09	6.76 E-09
Benzo(g,h,i)perylene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.03 E-09	4.51 E-09
Banzo(k)fluoranthene	1		EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.54 E-09	8.76 E-09
Beryllium Butane			EPA 42 Table 1.4-4 EPA 42 Table 1.4-3	1.2 E-05 2.1 E+00	1.18 E-08 2.06 E-03	1.03 E-08 1.80 E-03	4.51 E-08 7.89 E-03
Cadmium		1 1	EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	9.44 E-07	4.13 E-06
Chromium			EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	1.20 E-06	5.26 E-08
Chrysene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.54 E-09	6.76 E-09
Cobalt			EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	7.21 E-08	3.18 E-07
Copper		1 1	EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	7.29 E-07	3.19 E-06
Dibenzo(a,h)anthracene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.03 E-09	4.51 E-09
Dichtorobenzene		1 1	EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	1.03 E-06	4.51 E-06
Ethane Fluoranthane		[[EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03 2.94 E-09	2.66 E-03 2.57 E-09	1.16 E-02 1.13 E-08
Fluorene		1 1	EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	3.0 E-06 2.8 E-06	2.94 E-09 2.75 E-09	2.57 E-09 2.40 E-09	1.13 E-08
Formaldehyde			EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	8.43 E-05	2.82 E-04
Hexane		1 1	EPA 42 Table 1,4-3	1.8 E+00	1.76 E-03	1.54 E-03	6.78 E-03
Indeno(1,2,3-od)pyrene		[[[EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.54 E-09	8.78 E-09
Manganese		1 1	EPA 42 Table 1,4-4	3.8 E-04	3.73 E-07	3.26 E-07	1.43 E-06
Mercury		[[EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	2.23 E-07	9.77 E-07
Methane		1 1	EPA 42 Table 1.4-2	2.30	0.00225	1.97 E-03	8.64 E-03
Molybdenum			EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	9.44 E-07	4,13 E-06
Naphthalens Nickel	1	1 1	EPA 42 Table 1.4-3 EPA 42 Table 1.4-4	6.1 E-04 2.1 E-03	5.98 E-07 2.06 E-06	5.23 E-07 1.80 E-06	2.29 E-08 7.89 E-08
Pentane			EPA 42 Table 1.4-3	2.1 E-03 2.8 E+00	2.55 E-03	2.23 E-03	9.77 E-03
Phenanathrene			EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	1.46 E-08	6.39 E-08
Propane			EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	1.37 E-03	6.01 E-03
Pyrene	1		EPA 42 Table 1.4-3	5.0 E-08	4.90 E-09	4.29 E-09	1.88 E-08
Selenium			EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	2.06 E-08	9.02 E-08
Toluene)		EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	2.92 E-06	1.28 E-05
Vanadium			EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	1.97 E-08	8.64 E-06
Zino			EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	2.49 E-05	1.09 E-04

- Emission factor for "Small Boilers" and "Uncontrolled".

 Potential hours of operation of boiler (annual) =
 Actual hours of operation of boiler (used only as a backup boiler) =
 Boiler has not been used in the last two years.
 Boiler used for hot water.
 Identifier #B27.

Abbreviatione used;:

MMBtu Million Btu
hr Hours
yr Years
Ibg Pounds of emissions
tong Tons of emissions

8,760 hours/year 10 hours/year

Emissions ISU Small Equip 8/24/2003 B27 1 of 1 @2:57PM Syed

Emission Estimates

Date: 01-Jul-04

Location: 5th Street Apartments - Building #70

				EMISS	ON ESTIMATES		
ļ ,		Maximum Equipment Capacity	Emission i	Factors from EPA 42	.	following esti based on Emissia	
1 1		, ,			1		
EMISSIONS	Fuel		Reference Table		calculated	calculated	celculated
r		MMBtu/hr					
1 [Gas	0.420		lb _z /10 ⁴ sef	ib _e /MMBtu	lb _e /hr	ton _s /yr
col		1 1 1	EPA 42 Table 1.4-1	84	0.082	3.46 E-02	1.51 E-01
NO _x		l I I	EPA 42 Table 1.4-1	100	0.098	4.12 E-02	1.80 E-01
\$O ₂		i i i	EPA 42 Table 1.4-2	0.60	0.00059	2.47 E-04	1.08 E-03
PM10			EPA 42 Table 1.4-2 EPA 42 Table 1.4-2	7.60 7.60	0.0075	3.13 E-03 3.13 E-03	1.37 E-02 1.37 E-02
Pol		1 1	EPA 42 Table 1.4-2	0.0005	4.90 E-07	2.06 E-07	9.02 E-07
voc			EPA 42 Table 1.4-2	5.50	0.005	2.26 E-03	9.92 E-03
Toc		1 1 1	EPA 42 Table 1.4-2	11.00	0.000	4.53 E-03	1.98 E-02
2-Methylnaphthalene		1 1	EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	9.88 E-09	4.33 E-08
3-Methylchloranthrene	'	1 1	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.41 E-10	3.25 E-09
7.12-Dimethylbenz(a)anthracite		1 1 1	EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	6.59 E-09	2.89 E-08
Acenaphthene		1 1 1	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.41 E-10	3.25 E-09
Acenaphthylene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.41 E-10	3.25 E-09
Anthracene		}	EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	9.88 E-10	4.33 E-09
Arsenio			EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	8.24 E-08	3.61 E-07
Bariumi		1 1	EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	1.81 E-06	7.94 E-06
Benzo(a)anthracene		1 1 1	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.41 E-10	3.25 E-09
Benzene			EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	8.65 E-07	3.79 E-06
Benzo(a)pyrene		!![EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	4.94 E-10	2.16 E-09
Senzo(b)fluoranthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.41 E-10	3.25 E-09
Benzo(g,h,i)perytene		1 1 1	EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	4.94 E-10	2.16 E-09
Benzo(k)fluoranthene Beryllium		!!!	EPA 42 Table 1.4-3 EPA 42 Table 1.4-4	1.8 E-06 1.2 E-05	1.76 E-09 1.18 E-08	7.41 E-10 4.94 E-09	3.25 E-09 2.16 E-08
Butane		1 1 1	EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	8.65 E-04	3.79 E-03
Cadmium		! [[EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	4.53 E-07	1.98 E-06
Chromium		i 1 1	EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	5.76 E-07	2.52 E-06
Chrysene		1 1	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.41 E-10	3.25 E-09
Cobatt		1 1 1	EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	3,46 E-06	1.51 E-07
Copper			EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	3.50 E-07	1.53 E-06
Dibenzo(a,h)anthracene		1 1 1	EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	4.94 E-10	2.16 E-09
Dichlorobenzene		1 1	EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	4.94 E-07	2.16 E-06
Ethane		1 1 1	EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	1.28 E-03	5.59 E-03
Fluoranthene			EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	1.24 E-09	5.41 E-09
Fluorene		1 1 1	EPA 42 Table 1.4-3	2.6 E-06	2.75 E-09	1.15 E-09	5.05 E-09
Formsidehyde Hexane			EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	7.5 E-02 1.8 E+00	7.35 E-05 1.76 E-03	3.09 E-05 7.41 E-04	1.35 E-04 3.25 E-03
Indeno(1,2,3-ed)pyrene		1 1 1	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.41 E-10	3.25 E-09
Manganese			EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	1.56 E-07	6.85 E-07
Mercury		1 1	EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	1.07 E-07	4.69 E-07
Methanel			EPA 42 Table 1.4-2	2.30	0.00225	9.47 E-Q4	4.15 E-03
Molybdenum		1 1 1	EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	4.53 E-07	1.98 E-06
Naphthalene		1 1 1	EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	2.51 E-07	1,10 E-06
Nickel		1 1	EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	8.65 E-07	3.79 E-06
Pentane		1 1	EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	1.07 E-03	4.69 E-03
Phenanathrene		1 1	EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	7.00 E-09	3.07 E-08
Propene		1 1 1	EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	6.59 E-04	2.89 E-03
Pyrene		1 1	EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	2.06 E-09	9.02 E-09
Selenium		1 1	EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	9.88 E-09	4.33 E-08
Toluene			EPA 42 Table 1.4-3	3.4 E-03	3.33 €-06	1.40 E-06	6.13 E-06
Vanadium		1 1	EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	9.47 E-07	4.15 E-06
Zino		L,	EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	1.19 E-05	5.23 E-05

| 1 | Emission factor for "Small Boilers" and "Uncontrolled".
2	Potential hours of operation of boiler (smnust) =	8,760 hours/year
3	Actual hours of operation of boiler (winter: Sept 1 to May 31) = 273 days/year x 24 hours/day	
4	6,552 hours/year	
5	Identifier #828.	

Abbreviations used;:

MMBtu Million Btu
tir Hours
yr Years

(by Pounds of emissions

tons Tons of emissions

Emissions ISU Small Equip 6/24/2003 B28 1 of 1 @2:57PM Syad

Emission Estimates

Date: 01-Jul-04

Location: Schubert - Building #56

				EMISSION	ESTIMATES		
1		Maximum Equipment Capacity	Emission	Factors from EPA 42:		following esti based on Emissio	
EMISSIONS	Fuel		Reference Table		calculated	calculated	calculated
		MMBtu/hr					
!!	Gas	0.400		lbs/10 ⁴ sof	Ib _B /MMBtu	lb _e /hr	ton _e /yr
col			EPA 42 Table 1.4-1	84	0.082	3.29 E-02	1.44 E-01
NO _z		1 1	EPA 42 Table 1.4-1	100	0.098	3.92 E-02	1.72 E-01
SO ₁			EPA 42 Table 1.4-2	0.60	0.00059	2.35 E-04	1.03 E-03
PM10			EPA 42 Table 1.4-2	7.60	0.0075	2.98 E-03	1.31 E-02
PM Pb		1 1	EPA 42 Table 1.4-2	7.60	0.0075	2.98 E-03	1.31 E-02
Voc			EPA 42 Table 1.4-2 EPA 42 Table 1.4-2	. 0.0005 5.50	4.90 E-07 0.005	1.96 E-07 2.16 E-03	8.59 E-07 9.45 E-03
700		1 1	EPA 42 Table 1.4-2	11.00	0.003	4.31 E-03	1.89 €-02
2-Methylnaphthalene		[[EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	9.41 E-09	4.12 E-08
3-Methylchloranthrens		1 1	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
7,12-Dimethylbenz(s)anthracits			EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	6.27 E-09	2.75 E-08
Acenzphthene			EPA 42 Table 1.4-3	1.8 E-06	1.78 E-09	7.08 E-10	3.09 €-09
Acensphthylene		1 1	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Anthrasene			EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	9.41 E-10	4.12 E-09
Arsenio		1 1	EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	7.84 E-08	3.44 E-07
Barlum		, ,	EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	1.73 E-06	7.56 E-06
Benzo(a)anthracene			EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	1.8 E-06 2.1 E-03	1.76 E-09 2.06 E-06	7.06 E-10 8.24 E-07	3.09 E-09 3.81 E-06
Benzo(a)pyrene		1 1	EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	4.71 E-10	2.06 E-09
Benzo(b)fluoranthene		1 1	EPA 42 Table 1.4-3	1.8 E-06	1.78 E-09	7.08 E-10	3.08 E-08
Benzo(g,h,l)perylene))	EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	4.71 E-10	2.06 E-09
Benzo(k)fluoranthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Beryllium		1 1	EPA 42 Table 1.4-4	1.2 E-05	1.18 E-08	4.71 E-09	2.06 E-08
Butane		1 1	EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	8.24 E-04	3.61 E-03
Cadmium		1 1	EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	4.31 E-07	1.89 E-06
Chromium		1 1	EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	5.49 E-07	2.40 E-06
Chrysene			EPA 42 Table 1.4-3 EPA 42 Table 1.4-4	1.8 E-06 8.4 E-05	1.76 E-09	7.06 E-10 3.29 E-08	3.09 E-09
Cobalt Copper		i i	EPA 42 7 abie 1.4-4	8.4 E-05 8.5 E-04	8.24 E-08 8.33 E-07	3.29 E-08 3.33 E-07	1.44 E-07 1.46 E-06
Dibenzo(a,h)anthracene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	4.71 E-10	2.06 E-09
Dichlorobenzene		1 1	EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	4.71 E-07	2.06 E-06
Ethane		, ,	EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	1.22 E-03	5.32 E-03
Fluoranthene		i I	EPA 42 Table 1.4-3	3.0 €-06	2.94 E-09	1.18 E-09	5.15 E-09
Fluorene	1	1 1	EPA 42 Table 1.4-3	2.8 E-08	2.75 E-09	1.10 E-09	4.81 E-09
Formaldehyde			EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	2.94 E-05	1.29 E-04
Hexane		1 1	EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	7.06 E-04	3.09 E-03
Indeno(1,2,3-od)pyrene		1	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.08 E-10	3.09 E-09
Manganese]	EPA 42 Table 1.4-4	3.8 €-04	3.73 E-07	1.49 E-07	6.53 E-07
Mercury Methane	1	1 1	EPA 42 Table 1.4-4 EPA 42 Table 1.4-2	2.6 E-04 2.30	2.55 E-07 0.00225	1.02 E-07 9.02 E-04	4.47 E-07 3,95 E-03
Motybdenum		1 1	EPA 42 Table 1.4-2	1.1 E-03	1.08 E-06	4.31 E-07	1.89 E-06
Naphthalene		1 1	EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	2.39 E-07	1.05 E-06
Nickel			EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	8.24 E-07	3.61 E-06
Pentane			EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	1.02 €-03	4.47 E-03
Phenanathrens		1 1	EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	6.67 E-09	2.92 E-08
Propane			EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	6.27 E-04	2.75 E-03
Pyrene		1 1	EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	1.98 E-09	8,59 E-09
Selenium			EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	9.41 E-09	4.12 €-08
Toluene Vanadium			EPA 42 Table 1.4-3 EPA 42 Table 1.4-4	3.4 E-03	3.33 E-06	1.33 E-06	5.84 E-08
Zine		1 1	EPA 42 Table 1.4-4	2.3 E-03 2.9 E-02	2.25 E-06 2.84 E-05	9.02 E-07 1.14 E-05	3.95 E-06 4.98 E-05
Zine			EFA 42 180#6 1.4-4	2.8 E-02	2.04 E-05	1.14 E-03	4.90 E-00

- Abbraviations used;:

 MM8tu Million Btu
 hr Hours
 yr Years
 ibs Pounds of amissions
 tons Tons of amissions

Emissions ISU Small Equip 8/24/2003 829 1 of 1 @2:57PM Syed

Item #30: Boiler

Emission Estimates

Date: 01-Jul-04

Location: Schubert - Building #56

(EMISSIO	H ESTIMATES		
1 1		Maximum Equipment	- utantan	Factors from EPA 42:	- 1	following esti	
!		Capacity	Emission	Pactors from EPA 42:	- 1	based on Emissio	n ractors
EMISSIONS	Fuel		Reference Table		calculated	calculated	calculated
		MMBtu/hr			-	··	
1	Gas	0,400		lbs/10 ¹ sof	lb _e /MMBtu	lb _e /hr	ton _e /yr
) co)		1 1 1	EPA 42 Table 1.4-1	84	0.082	3.29 E-02	1.44 E-01
NO _X			EPA 42 Table 1.4-1	100	0.098	3.92 E-02	1.72 €-01
\$O ₂		1 1	EPA 42 Table 1.4-2	0.60	0.00059	2.35 E-04	1.03 E-03
PM10			EPA 42 Table 1.4-2	7.60	0.0075	2.98 E-03	1.31 E-02
PM		1 i i	EPA 42 Table 1.4-2	7.60	0.0075	2.98 E-03	1.31 E-02
Pb VOC		1 1	EPA 42 Table 1.4-2 EPA 42 Table 1.4-2	0.0005 5.50	4.90 E-07 0.005	1.96 E-07 2.16 E-03	8,59 E-07 9,45 E-03
TOC			EPA 42 Table 1.4-2 EPA 42 Table 1.4-2	5.50 11,00	0.005	2.16 E-03 4.31 E-03	1,89 E-02
2-Methylnaphthalene		1 1 1	EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	9.41 E-09	4.12 E-08
3-Methylohioranthrene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.08 E-10	3.09 E-09
7,12-Dimethylbenz(a)anthracite		!!!	EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	6.27 E-09	2.75 E-08
Acenaphthene		1 1	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Acenaphthylene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Anthracene		1 1	EPA 42 Table 1.4-3	2.4 E-08	2.35 E-09	9.41 E-10	4.12 E-09
Arsenia		1 1	EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	7.84 E-08	3.44 E-07
Barlum			EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	1.73 E-06	7.56 E-06
Benzo(a)anthracene		1 ! !	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Benzene			EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	8.24 E-07	3.61 E-06
Benzo(a)pyrene		1 1 1	EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	4.71 E-10	2.06 E-09
Benzo(b)fluoranthene Senzo(g,h,i)perylenel		[EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	1.8 E-06 1.2 E-06	1.76 E-09 1.18 E-09	7.08 E-10 4.71 E-10	3.09 E-09 2.06 E-09
Benzo(k)fluoranthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.08 E-10	3.09 E-09
Berytlium		1 1 1	EPA 42 Table 1.4-4	1.2 E-05	1.18 E-08	4.71 E-09	2.05 E-08
Butane			EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	8.24 E-04	3.61 E-03
Cadmium		1 1 1	EPA 42 Table 1.4-4	1.1 E-03	1.08 E-08	4.31 E-07	1.89 E-06
Chromium		1 1 1	EPA 42 Table 1.4-4	1.4 E-03	1.37 E-08	5.49 E-07	2.40 E-06
Chrysene			EPA 42 Table 1.4-3	1.8 E-06	1,76 E-09	7.05 E-10	3.09 E-09
Cobalt		1 1 1	EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	3.29 E-08	1.44 E-07
Copper		1 1	EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	3.33 E-07	1.46 E-06
Dibenzo(s,h)anthracene		1 1	EPA 42 Table 1,4-3	1.2 E-06	1.18 E-09	4.71 E-10	2.06 E-09
Dichlorobenzene		! [EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	4.71 E-07	2.06 E-06
Ethane Fluoranthene			EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	1.22 E-03	5.32 E-03
Fluoranti		1 1 1	EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	3.0 E-06 2.8 E-06	2.94 E-09 2.75 E-09	1.18 E-09 1.10 E-09	5.15 E-09 4.81 E-09
Formaldehyde		1 1	EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	2.94 E-05	1.29 E-04
Hexane		1 1 1	EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	7.06 E-04	3.09 E-03
Indeno(1,2,3-cd)pyrene		1 1	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Manganese		1 1	EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	1.49 E-07	8.53 E-07
Mercury		1 1 1	EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	1.02 E-07	4.47 E-07
Methane		1 1 1	EPA 42 Table 1.4-2	2.30	0.00225	9.02 E-04	3.95 E-03
Molybdenum		1 1	EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	4.31 E-07	1.89 E-06
Naphthalene		[]	EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	2.39 E-07	1.05 E-06
Nickel		((EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	8.24 E-07	3.61 E-06
Pentane			EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	1.02 E-03	4.47 E-03
Phenanathrene Propane			EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	1.7 E-05 1.6 E+00	1.67 E-08 1.57 E-03	6.67 E-09	2.92 E-08
Pyrene) 1 1	EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	6.27 E-04 1.96 E-09	2.75 E-03 8.59 E-09
Selenium			EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	9.41 E-09	4.12 E-08
Taluene			EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	1.33 E-06	5.84 E-08
Vanadium			EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	9.02 E-07	3.95 E-06
Zine			EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	1.14 E-05	4.98 E-05

- Emission factor for "Small Bollers" and "Uncontrolled".

 Actual hours of operation of boilers (all year) = 385 days/year x 24 hours/day = 8,780 hours/year

 Boiler used for heating.

 Identifier #830

Abbreviations used:: MMBtu Million Btu hr Hours yr Years Ib_{El} Pounds of emissions ton_{El} Tons of emissions

Emissions ISU Small Equip 6/24/2003 830 1 of 1 @2:57PM Syed

Item #31: Boiler

Emission Estimates

Date: 01-Jul-04

Location: RFC Ph. II - Building #48

(EMISS	ON ESTIMATES		
		Maximum Equipment Capacity	Emission	Factors from EPA 42	. !	following esti- based on Emissio	
, ,		Oupasin,		TOTOLO HOME CO A 42	"	based on Limean	
EMISSIONS	Fuel		Reference Table		calculated	calculated	calculated
r		MMBtu/hr					
i I	Gas	0.169		lbu/10° acf	lb _z /MMBtu	lb _e /kr	ton _e /yr
) co)		1 1	EPA 42 Table 1.4-1	84	0.082	1.39 E-02	6.10 E-02
NO _x			EPA 42 Table 1.4-1	100	0.098	1.66 E-02	7.26 E-02
\$0,		1 1	EPA 42 Table 1.4-2	0.60	0.00059	9.94 E-05	4.35 E-04
PM10			EPA 42 Table 1.4-2 EPA 42 Table 1.4-2	7.60 7.60	0.0075	1.26 E-03	5.52 E-03
PM Pb			EPA 42 Table 1.4-2 EPA 42 Table 1.4-2	7.6D 0.0005	0.0075 4.90 E-07	1.26 E-03 8.28 E-08	5.52 E-03
voci		i i	EPA 42 Table 1.4-2	5.50	4.90 E-07	9.11 E-04	3.63 E-07 3.99 E-03
Toc			EPA 42 Table 1.4-2	11.00	0.005	1.82 E-03	7.98 E-03
2-Methylnaphthalene		1 1	EPA 42 Table 1.4-3	2.4 E-05	2.35 E-06	3.98 E-09	1.74 E-08
3-Methylchloranthrene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	2.98 E-10	1.31 E-09
7,12-Dimethylbenz(a)anthracits			EPA 42 Table 1.4-3	1.8 E-05	1.57 E-08	2.65 E-09	1.16 E-08
Acenaphthene		1 1	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	2.98 E-10	1.31 E-09
Acenaphthylene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	2.98 E-10	1.31 E-09
Anthracene		1 1	EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	3.98 E-10	1.74 E-09
Arsenia			EPA 42 Table 1.4-4	2.0 €-04	1.96 E-07	3.31 E-08	1.45 E-07
Barium Benzo(a)anthracene		1 1	EPA 42 Table 1.4-4 EPA 42 Table 1.4-3	4.4 E-03 1.8 E-06	4.31 E-06 1.76 E-09	7.29 E-07 2.98 E-10	3.19 E-06
Benzene		1 1	EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	3.48 E-07	1.31 E-09 1.52 E-06
Benzo(s)pyrene		!!!!	EPA 42 Table 1,4-3	1.2 E-06	1.18 E-09	1.99 E-10	8.71 E-10
Benzo(b)fluoranthens			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	2.98 E-10	1.31 E-09
Benzo(g,h,l)perylene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.99 E-10	8.71 E-10
Benzo(k)fluoranthene		1 1	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	2.98 E-10	1.31 E-09
Beryllium		1 1	EPA 42 Table 1.4-4	1.2 E-05	1.18 E-08	1.99 E-09	8.71 E-09
Butane			EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	3.48 E-04	1.52 E-03
Cadmium			EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	1.82 E-07	7.98 E-07
Chromium			EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	2.32 E-07	1.02 E-06
Chrysene Cobalt		1 1	EPA 42 Table 1.4-3 EPA 42 Table 1.4-4	1.8 E-06 6.4 E-05	1.76 E-09 8.24 E-08	2.98 E-10 1.39 E-08	1.31 E-09 6.10 E-08
Copper			EPA 42 Table 1.4-4	8.5 E-04	8.24 E-08 8.33 E-07	1.39 E-08 1.41 E-07	6.10 E-08
Dibenzo(s,h)anthracene		, , ,	EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.99 E-10	8.71 E-10
Dichlorobenzene			EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	1.99 E-07	8.71 E-07
Ethane			EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	5.14 E-04	2.25 E-03
Fluoranthene			EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	4.97 E-10	2.18 E-09
Fluorene			EPA 42 Table 1.4-3	2.8 E-06	2.75 E-09	4.64 E-10	2.03 E-09
Formaldehyde		1 1	EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	1.24 E-05	5.44 E-05
Hexane			EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	2.98 E-04	1.31 E-03
Indeno(1,2,3-cd)pyrene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	2.98 E-10	1.31 E-09
Manganese Mercury			EPA 42 Table 1.4-4	3.8 E-04 2.6 E-04	3.73 E-07	6.30 E-08	2.76 E-07
Methane		1 1	EPA 42 Table 1.4-4 EPA 42 Table 1.4-2	2.5 E-04 2.30	2.55 E-07 3.00225	4.31 E-08 3.81 E-04	1.89 E-07 1.67 E-03
Molybdenum		1 1 1	EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	1.82 E-07	7.98 E-07
Naphthalene		1 1	EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	1.01 E-07	4.43 E-07
Nickel			EPA 42 Table 1 4-4	2.1 E-03	2.06 E-06	3.48 E-07	1.52 E-06
Pentane			EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	4.31 E-04	1.89 E-03
Phonanathrone			EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	2.82 E-09	1.23 E-08
Propane]]	EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	2.65 E-04	1.16 E-03
Pyrene			EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	8.28 E-10	3.63 E-09
Selenium		1	EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	3.98 E-09	1.74 E-08
Toluene Vanadium			EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	5.63 E-07	2.47 E-06
Vanadium Zino		1 1	EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	3.81 E-07	1.67 E-06
			EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05]	4.80 E-06	2.10 E-05

- | 1 Emission factor for "Small Boilers" and "Uncontrolled".
 | Potential hours of operation of boiler (annus) = 3 Actual hours of operation of boiler (11 months) = 335 days/year x 24 hours/day = 4 Boiler used for not water for cosmetology department.
 | Identifier #831.

- Abbreviations used;:

 MMBtu Million Btu
 hr Hours
 yr Years
 Ib_E Pounds of emissions
 ton_E Tons of emissions

8,760 hours/year 8,040 hours/year

Emissions ISU Small Equip 6/24/2003 B31 1 of 1 @2:57PM Syed

Item #32: Boiler

Emission Estimates

Date: 01-Jul-04

Location: RFC Ph. III - Building #48

					EMISSIO	N EST MATES		
1		Maximum Equ Capacit		Emission I	Factors from EPA 42:	1	following eath based on Emissio	
EMISSIONS	Fuel	<u> </u>		Reference Table		calculated	celculated	calculated
			MMBtu/hr					
	Gas.	2 bollers	0.848		lb _k /10° sof	Ib _# /MMStu	lb _a /hr	ton _e /yr
co		x 0.274 MMBtu/hr		EPA 42 Table 1.4-1	84	0.082	4.51 E-02	1.98 E-01
HO _x		=0.848 MMBtu/hr	1 1	EPA 42 Table 1.4-1	100	890.0	5.37 E-02	2.35 E-01
SO₂		1		EPA 42 Table 1.4-2	0.60	0.00059	3.22 E-04	1.41 E-03
PM10		Į į		EPA 42 Table 1.4-2	7.60	0.0075	4.08 E-03	1.79 E-02
PM		1	!!	EPA 42 Table 1.4-2	7.60 0.0005	0.0075 4.90 E-07	4.08 E-03 2.69 E-07	1.79 E-02 1.18 E-03
Pb		ı	1 1	EPA 42 Table 1.4-2 EPA 42 Table 1.4-2	5.50	4.90 E-07 0.005	2.09 E-07 2.95 E-03	1.18 E-00
voc Toc		}	1 1	EPA 42 Table 1.4-2	11.00	0.011	5.91 E-03	2.59 E-02
2-Methylnaphthalene		1	l i	EPA 42 Table 1.4-3	2.4 E-05	2 35 E-08	1.29 E-08	5.65 E-08
3-Methylchioranthrene		1		EPA 42 Table 1.4-3	1.8 E-06	1.78 E-09	9.67 E-10	4.24 E-09
7,12-Dimethylbenz(a)anthracite		ì	1 1	EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	8.60 E-09	3.77 E-0
Acenaphthene		i		EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	9.67 E-10	4,24 E-09
Acenaphthylene		ł .		EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	8.67 E-10	4.24 E-01
Anthracene		1		EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	1.29 E-09	5.65 E-09
Arsenio		1	i	EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	1.07 E-07	4,71 E-0
Barlum		1		EPA 42 Table 1.4-4	4.4 E-03	4.31 E-08	2.38 E-06	1.04 E-0
Benzo(a)anthracene		1	I i	EPA 42 Table 1.4-3	1.8 E-08	1.76 E-09	9.67 E-10	4.24 E-0
Benzene		ľ	1	EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	1.13 E-06	4.94 E-0
Benzo(a)pyrene		1	1	EPA 42 Table 1.4-3	1.2 E-0 0	1.18 E-09	6.45 E-10	2.82 E-0
Benzo(b)fluoranthene				EPA 42 Table 1.4-3	1,8 E-06	1.76 E-09	9.67 E-10 6.45 E-10	4.24 E-0 2.82 E-0
Benzo(g,h,l)perylene		1	1	EPA 42 Table 1.4-3	1.2 E-06 1.8 E-08	1.18 E-09 1.78 E-09	9.67 E-10	4.24 E-0
Benze(k)fluoranthene		1		EPA 42 Table 1.4-3 EPA 42 Table 1.4-4	1.8 E-06	1.18 E-08	6.45 E-09	2.82 E-0
Beryllium Butane			1	EPA 42 Table 1.4-3	2.1 E+00	2.08 E-03	1.13 E-03	4.94 E-0
Cadmium	Į.			EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	5.91 E-07	2.59 E-0
Casmium			1	EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	7.52 E-07	3.29 E-0
Chrysene	1	1		EPA 42 Table 1.4-3	1.8 E-08	1.76 E-09	9.67 E-10	4.24 E-0
Gobalt	1	1	1	EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	4.51 E-08	1.98 E-0
Copper		1		EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	4.57 E-07	2.00 E-0
Dibenzo(a,h)anthracene		1		EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	8.45 E-10	2.82 E-0
Dichlorobenzene	1	ì)	EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	6.45 E-07	2.82 E-0
Ethane	l	1		EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	1.67 E-03	7.29 E-0
Fluoranthene	l	Į.		EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	1.81 E-09	7.08 €-0
Fluorene	1	1		EPA 42 Table 1.4-3	2.8 E-06	2.75 E-09	1.50 E-09	6.59 E-0
Formaldehyde	1	1		EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	4.03 E-05	1.76 E-0
Hexane	1	1	1	EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	9.67 E-04	4.24 E-0
Indeno(1,2,3-od)pyrene	l	1	I .	EPA 42 Table 1.4-3	1.8 E-06 3.8 E-04	1.76 E-09 3.73 E-07	9.87 E-10 2.04 E-07	8.94 E-0
Menganese	1	1	1	EPA 42 Table 1.4-4 EPA 42 Table 1.4-4	3.8 E-04 2.6 E-04	2.55 E-07	1.40 E-07	6.12 E-0
Mercury Methane	ì	1	1	EPA 42 Table 1.4-2	2.30	0.00225	1.24 E-03	5.41 E-0
Molybdenum	1	1	1	EPA 42 Table 1.4-4	1.1 E-03	1.08 E-08	5.81 E-07	2.59 E-0
Naphthalene	l	Į.	t i	EPA 42 Table 1.4-3	8.1 E-04	5.98 E-07	3.28 E-07	1.44 E-0
Nickel	I		I	EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	1.13 E-06	4.94 E-0
Pentana	I		1	EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	1.40 E-03	6.12 E-0
Phenanathrene	1	1		EPA 42 Table 1.4-3	1.7 E-05	1.87 E-08	9.13 E-09	4.00 E-0
Propane	l		I	EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	8.60 E-04	3.77 E-0
Pyrene	I	1	I	EPA 42 Table 1.4-3	5.0 £-08	4.90 E-09	2.69 E-09	1,18 E-0
Sejenium	ì	1	1	EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	1.29 E-08	5.65 E-0
Toluene	!	1	I	EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	1.83 E-06	8.00 E-0
Vanadium	I	1	l	EPA 42 Table 1.4-4	2.3 E-03	2.25 E-08	1.24 E-06	5.41 E-0
Zino	1	1	1	EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	1.58 E-05	6.62 E-0

8,760 hours/year

- Notes:

 1 Emission factor for "Small Boilers" and "Uncontrolled".

 2 Actual hours of operation of boiler (all year) = 365 days/year x 24 hours/day = 3 Boiler used for hot water.

 4 Identifier #832.

- Abbreviations used::

 MMBtu Million Btu
 he Hours
 yr Years
 Ibg Pounds of emissions
 tong Tons of emissions

Emissions ISU Small Equip 6/24/2003 832 1 of 1 @2:57PM Syed

Item #33: Boilers

Emission Estimates

Date: 01-Jul-04

Location: Performing Arts Center Building #88

					EMISS	ON ESTIMATES	4.11.4	
		Maximum Equi Capacity	,	Emission F	actors from EPA 42	t: [following esti based on Emissio	
EMISSIONS	Fuel]	Reference Table		calculated	calculated	calculated
			MMBtu/hr					
	Gas	Total of 4 boilers:	4,960		(b _e /10° sof	Ibe/MMStu	lb _a /hr	ton _e /yr
col		each boiler with	}	EPA 42 Table 1.4-1	84	0.082	4.08 E-01	1.79 E+00
NO		an output of		EPA 42 Table 1.4-1	100	0.098	4.86 E-01	2.13 E+00
80,		2.07 MMBtu/hr;		EPA 42 Table 1.4-2	0.60	0.00058	2.92 E-03	1,28 E-02
PM10		Firing rate = 60%	i .	EPA 42 Table 1.4-2	7.60	0.0075	3.70 E-02	1.82 E-01
PM		=60%x2.07=1.24	I I	EPA 42 Table 1.4-2	7.60	0.0075	3.70 E-02	1.62 E-01
Pb		For 4 bollers:	i i	EPA 42 Table 1.4-2	0.0005	4.90 E-07	2.43 E-06	1.06 E-05
voc		=4x1.24 MMBtu/hr	!	EPA 42 Table 1.4-2	5.50	0.005	2.67 E-02	1.17 E-01
тос		=4.96 MMBtu/hr		EPA 42 Table 1.4-2	11.00	0.011	5.35 E-02	2.34 E-01
2-Methylnaphthalene		ì		EPA 42 Table 1.4-3	2.4 E-05 1.8 E-06	2.35 E-08. 1.76 E-09	1.17 E-07 8.75 E-09	5,11 E-07 3,83 E-08
3-Methylchloranthrene			1 1	EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	1.8 E-06 1.6 E-05	1.57 E-08	7.78 E-08	3.41 E-07
7,12-Dimethylbenz(a)anthracite Acenaphthene		ì	1	EPA 42 Table 1.4-3	1.8 E-06	1.78 E-08	8.75 E-09	3.83 E-08
Acenaphthylene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	8.75 E-09	3.83 E-08
Anthracene		Į i		EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	1.17 E-08	5.11 E-08
Arsenic				EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	9.73 E-07	4.26 E-08
Barlum			1 1	EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	2.14 E-05	9.37 E-05
Benzo(a)anthracene		ì	1 1	EPA 42 Table 1.4-3	1.8 E-08	1.76 E-09	8.75 E-09	3.83 E-08
Benzene			I 1	EPA 42 Table 1.4-3	2.1 E-03	2.08 E-06	1.02 E-05	4.47 E-05
Benzo(a)pyrene		Į.	, ,	EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	5.84 E-09	2.58 E-08
Benzo(b)fluoranthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	8.75 E-09	3.83 E-08
Benzo(g,h,i)perylene		!	i I	EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	5.84 E-09	2.56 E-08
Senzo(k)fluoranthene		\	1 1	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	8.75 E-09 5.84 E-08	3.83 E-08 2.56 E-07
Beryllium		1	l 1	EPA 42 Table 1.4-4	1.2 E-05 2.1 E+00	1.18 E-08 2.06 E-03	1.02 E-02	4.47 E-02
Butane Cadmium	Į.	l		EPA 42 Table 1.4-3 EPA 42 Table 1.4-4	1.1 E-03	1.08 E-08	5.35 E-08	2.34 E-05
Chromium		ĺ		EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	6.81 E-08	2.98 E-05
Chrysene		1		EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	8.75 E-09	3.83 E-08
Cobalt		1) 1	EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	4.08 E-07	1.79 E-06
Copper	!	[1	EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	4.13 E-08	1.81 E-05
Dibenzo(s,h)enthrecene		l .		EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	5.84 E-09	2.56 E-08
Dichlorobenzene				EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	5.84 E-06	2.56 E-05
Ethane		I	1	EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	1.51 E-02	6.60 E-02
Fluoranthene	1	1	1 1	EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	1.46 E-08	6.39 E-08
Fluorene				EPA 42 Table 1.4-3	2.8 E-06	2.75 E-09 7.35 E-05	1.36 E-08 3.65 E-04	5.96 E-08 1.60 E-03
Formaldehyde		{	1	EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	7.5 E-02 1.8 E+00	7.35 E-051 1.76 E-03	3.65 E-04 8.75 E-03	1.80 E-03 3.83 E-02
Hexane Indeno(1,2,3-od)pyrene			1	EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	8.75 E-09	3.83 E-02
Manganese		1		EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	1.85 E-08	8.09 E-06
Mercury	1	1	1	EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	1.26 E-06	5.54 E-06
Methane		1		EPA 42 Table 1.4-2	2.30	0.00225	1.12 E-02	4.90 E-02
Molybdenum	1	1	1	EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	5.35 E-06	2.34 E-05
Naphthalene	1		1 1	EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	2.97 E-08	1.30 E-05
Nickel		1	[EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	1.02 E-05	4,47 E-05
Pentane]	1	1	EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	1.26 E-02	5.54 E-02
Phonanathrono	1			EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	8.27 E-08	3.62 E-07
Propane	1	1	1	EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	7.78 E-03	3.41 E-02
Pyrene	l	1	[EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	2.43 E-08	1.06 E-07
Selenium Totuene	ľ	l .	1	EPA 42 Table 1.4-4 EPA 42 Table 1.4-3	2.4 E-05 3.4 E-03	2.35 E-08 3.33 E-06	1.17 E-07 1.65 E-05	5.11 E-07 7.24 E-05
Toluene Vanadlum	1	1	J i	EPA 42 Table 1.4-3 EPA 42 Table 1.4-4	3.4 E-03 2.3 E-03	3,33 E-06 2.25 E-06	1.65 E-05 1.12 E-05	7.24 E-05 4.90 E-05
Vanadjum Zinc	!			EPA 42 Table 1.4-4	2.3 E-03 2.9 E-02	2.25 E-06 2.84 E-05	1.12 E-05 1.41 E-04	6.18 E-04
Zinc				CFA 42 1809 1.4-4	2.8 E-02	2.84 E-05	1.41 6-04	6.10 E-04

- Notes:

 1 Emission fector for "Small Boilers" and "Uncontrolled".

 2 Potential hours of operation of boiler (annual) =

 3 Actual hours of operation of boiler (winter: Sept 1 to May 31) = 273 days/year x 24 hours/day =

 4 Boilers used during winter for heating.

 5 Identifier #B33.

Abbreviations used::

MMBtu Million Bitu
hr Hours
yr Years

Ibg Pounds of emissions
tone Tone of emissions

Emissions ISU Small Equip 8/24/2003 B33 1 of 1 @2:57PM Syed

Item #34: Boiler

Emission Estimates

Date: 01-Jul-04

Location: Performing Arts Center Building #88

				EMISSIO	N ESTIMATES		
		Maximum Equipment Capacity	Emission	Factors from EPA 42:	- 1	following esti based on Emissio	
EMISSIONS	Fuet		Reference Table		calculated	calculated	calculated
		MMBtuhr	***				
1 !	Gas	0.990		b_/10 ⁴ sof	Ib./MMBtu	lb _e /hr	tone/yr
col			EPA 42 Table 1.4-1	84	0.082	8.15 E-02	3.57 E-01
NO _x		l	EPA 42 Table 1.4-1	100	0.098	9.71 E-02	4.25 E-01
\$O ₂			EPA 42 Table 1.4-2	0.60	0.00059	5.82 E-04	2.55 E-03
PM10			EPA 42 Table 1.4-2	7.60	0.0075	7.38 E+03	3.23 E-02
PM		i l	EPA 42 Table 1.4-2	7.60	0.0075	7.38 E-03	3.23 E-02
Pb VOC		[]	EPA 42 Table 1.4-2	0.0005	4.90 E-07	4.85 E-07	2.13 E-08
Toc			EPA 42 Table 1.4-2	5.50	0.005	5.34 E-03	2.34 E-02
2-Methylnaphthalene			EPA 42 Table 1.4-2 EPA 42 Table 1.4-3	11.00 2.4 E-05	0.011 2.35 E-08	1.07 E-02	4.68 E-02
3-Methylchlorenthrene			EPA 42 Table 1.4-3	2.4 E-05 1.8 E-06	1.76 E-09	2.33 E-08 1.75 E-09	1.02 E-07 7.65 E-09
7,12-Dimethylbenz(a)anthracite	1		EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	1.75 E-08	6.80 E-08
Acenaphthene			EPA 42 Table 1.4-3	1.8 E-08	1.76 E-09	1.75 E-09	7.85 E-09
Asenaphthylene	i		EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.75 E-09	7.65 E-09
Anthracene			EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	2.33 E-09	1.02 E-08
Arsenio			EPA 42 Table 1.4-4	2.0 E-Q4	1.96 E-07	1.94 E-07	8.50 E-07
Benzo(a)anthrapene		1 1	EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	4.27 E-06	1.87 E-05
Senzene			EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	1.8 E-06 2.1 E-03	1.76 E-09	1.75 E-09	7.65 E-09
Benzo(a)pyrene			EPA 42 Table 1.4-3	2.1 E-03 1.2 E-06	2.06 E-06 1.18 E-09	2.04 E-06 1.16 E-09	8.93 E-06
Benzo(b)fluoranthene	- 1		EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.75 E-09	5.10 E-09 7.65 E-09
Benzo(g,h,l)perylene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.16 E-09	5.10 E-09
Benzo(k)fluoranthene		i 1	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.75 E-09	7.65 E-09
Beryllium			EPA 42 Table 1.4-4	1.2 E-05	1.18 E-08	1.16 E-08	5.10 E-08
Sutane			EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	2.04 E-03	8.93 E-03
Cadmium			EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	1.07 E-08	4.68 E-06
Chromium		1 1	EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	1.36 E-06	5.95 E-06
Cobalt			EPA 42 Table 1.4-3 EPA 42 Table 1.4-4	1.8 E-06 8.4 E-05	1.76 E-09	1.75 E-09	7.85 E-09
Copper			EPA 42 Table 1.4-4	8.5 E-04	8.24 E-08 8.33 E-07	8.15 E-08 8.25 E-07	3.57 E-07
Dibenzo(a,h)enthracene		1 1	EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.16 E-09	3.61 E-06 5.10 E-09
Dichlorobenzene		1 1	EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	1.16 E-06	5.10 E-08
Ethane		1 1	EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	3.01 E-03	1.32 E-02
Fluoranthene		i	EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	2.91 E-09	1.28 E-08
Fluorene	- 1		EPA 42 Table 1.4-3	2.8 E-06	2:75 E-09	2.72 E-09	1.19 E-08
Formaldehyde Hexane		[[EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	7.28 E-05	3.19 E-04
Indeno(1,2,3-cd)pyrene		1 1	EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	1.75 E-03	7.65 E-03
Manganese			EPA 42 Table 1.4-3 EPA 42 Table 1.4-4	1.8 E-06 3.8 E-04	1.76 E-09 3.73 E-07	1.75 E-09 3.69 E-07	7.65 E-09
Mercury			EPA 42 Table 1.4-4	3.8 E-04 2.6 E-04	2.55 E-07	3.69 E-07 2.52 E-07	1.62 E-06 1.11 E-06
Methane		i 1	EPA 42 Table 1.4-2	2.30	0.00225	2.23 E-03	9.78 E-03
Molybdenum	J		EPA 42 Table 1.4-4	1.1 E-03	1.08 E-08	1.07 E-06	4.88 E-06
Haphthalene			EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	5.92 E-07	2.59 E-06
Nickel	I		EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	2.04 E-06	8.93 E-06
Pentane	- 1		EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	2.52 E-03	1.11 E-02
Phenanathrene Propane	1		EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	1.65 E-08	7.23 E-08
Pyrene	- 1		EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	1.6 E+00 5.0 E-06	1.57 E-03	1.55 E-03	6.80 E-03
Selenium	- 1	1 1	EPA 42 Table 1.4-3 EPA 42 Table 1.4-4	5.0 E-06 2.4 E-05	4.90 E-09 2.35 E-08	4.85 E-09 2.33 E-08	2.13 E-08
Toluens	1	[[EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	2.33 E-08 3.30 E-08	1.02 E-07 1.45 E-05
Vanadium	- 1	[[EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	2.23 E-08	9.78 E-06
Zinc			EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	2.81 E-05	1.23 E-04

- |fee:
 1 Emission fector for "Small Boilers" and "Uncontrolled".
 2 Actual hours of operation of boilers (all year) = 365 days/year x 24 hours/day = 8,760 hours/year
 3 Boilers used all year for domestic hot water.
 4 Identifier #B34.

Abbreviations used::

MMBtu Million Btu
hr Hours
yr Years
lib_e Pounds of emissions
ton_e Tons of emissions

Emissions ISU Small Equip 6/24/2003 B34 1 of 1 @2:57PM Syed

Item #36: Boilers

Emission Estimates

Date: 01-Jul-04

Location: Holt Arena Building #60

		1.			EMISSIC	N ESTIMATES			
		Maximum Equ Capsolt	.,	Emission I	factors from EPA 42:			following estimates used on Emission Factors	
EMISSIONS	Fuel			Reference Table		calculated	calculated	calculated	
			MM8twhr						
1	Gas	Total of 2 boilers;	0.236		lb=/10° sof	Ib./MMBtu	lb _e /hr	tone/yr	
co		fuel Input:	1	EPA 42 Table 1.4-1	84	0.082	1.94 E-02	8.51 E-02	
NOx		=0.275+0.197	1	EPA 42 Table 1.4-1	100	0.098	2.31 E-02	1.01 E-01	
80,		=0.472 MMBtw/hr	l 1	EPA 42 Table 1.4-2	0.60	0.00059	1.39 E-04	6.08 E-04	
PM10		and at a	l 1	EPA 42 Table 1.4-2	7.60	0.0075	1.76 E-03	7.70 E-03	
PM		firing rate of 60%	l 1	EPA 42 Table 1.4-2	7.60	0.0075	1.76 E-03	7.70 E-03	
Pb		=60%x0.476=0.236	1 1	EPA 42 Table 1.4-2	0.0005	4.90 E-07	1.16 E-07	5.07 E-07	
voc		=0.236 MMBtu/hr		EPA 42 Table 1.4-2	5.50	0.005	1.27 E-03	5.57 E-00	
тос		l	l 1	EPA 42 Table 1.4-2	11.00	0.011	2.55 E-03	1.11 E-02	
2-Methylnaphthaiene				EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	5.55 E-09	2.43 E-08	
3-Methylchloranthrene		l	ł I	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	4.16 E-10 3.70 E-09	1.82 E-09 1.62 E-08	
7,12-Dimethylbenz(a)anthracite		I		EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	1.6 E-05 1.8 E-06	1.57 E-08 1.76 E-09	4.18 E-10	1.82 E-06	
Acenaphthene Acenaphthylene			1 1	EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	4.16 E-10	1.82 E-00	
Anthracene		ļ	1 1	EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	5.55 E-10	2.43 E-09	
Arsenio			1 1	EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	4.63 E-08	2.03 E-07	
Barium		l		EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	1.02 E-06	4.48 E-06	
Benzo(s)anthracene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	4.16 E-10	1,82 E-06	
Benzene				EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	4.86 E-07	2.13 E-00	
Benzo(a)pyrene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	2.78 E-10	1.22 E-01	
Benzo(b)fluoranthene				EPA 42 Table 1.4-3	1.8 E-08	1.76 E-09	4.16 E-10	1.82 E-0	
Benzo(g,h,l)perylene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	2.78 E-10	1.22 E-0	
Benzo(k)fluoranthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	4.16 E-10	1.82 E-01	
Beryllium				EPA 42 Table 1.4-4	1.2 E-05	1.18 E-08	2.78 E-09	1.22 E-0	
Butane				EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	4.88 E-04	2.13 E-0	
Cadmium				EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	2.55 E-07	1.11 E-0	
Chromium			I 1	EPA 42 Table 1.4-4	1.4 E-03 1.8 E-08	1.37 E-06 1.76 E-09	3.24 E-07 4.16 E-10	1.42 E-0 1.82 E-0	
Chrysene				EPA 42 Table 1.4-3 EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	1.94 E-08	8.51 E-0	
Cobalt		į.		EPA 42 Table 1.4-4 EPA 42 Table 1.4-4	8.4 E-05 8.5 E-04	8.24 E-08 8.33 E-07	1.94 E-08 1.97 E-07	8.61 E-0	
Copper Dibenzo(a.h)anthracene			1 !	EPA 42 Table 1.4-4 EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	2.78 E-10	1.22 E-0	
Dichiorobenzene		l .	1 :	EPA 42 Table 1.4-3	1.2 E-03	1.18 E-08	2.78 E-07	1.22 E-0	
Ethane				EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	7.17 E-04	3.14 E-0	
Fluoranthene				EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	6.94 E-10	3.04 E-0	
Fluorene		1		EPA 42 Table 1.4-3	2.8 E-06	2.75 E-09	6.48 E-10	2.84 E-0	
Formaldehyde		1		EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	1.74 E-05	7.60 E-0	
Hexane		1	i i	EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	4.16 E-04	1.82 E-0	
tndeno(1,2,3-od)pyrene		1		EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	4.16 E-10	1.82 E-0	
Manganese		1		EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	8.79 E-08	3.85 E-0	
Meroury		1		EPA 42 Table 1.4-4	2.5 E-04	2.55 E-07	6.02 E-08	2.63 E-0	
Methane		1		EPA 42 Table 1.4-2	2.30	0.00225	5.32 E-04 2.55 E-07	2.33 E-0	
Molybdenum		ł		EPA 42 Table 1.4-4 EPA 42 Table 1.4-3	1.1 E-03 6.1 E-04	1.08 E-06 5.98 E-07	2.55 E-07 1.41 E-07	1.11 E-00 6.18 E-01	
Naphthalene Nickei				EPA 42 Table 1.4-3 EPA 42 Table 1.4-4	6.1 E-04 2.1 E-03	2.06 E-06	1.41 E-07 4.86 E-07	0.18 E-0 2.13 E-0	
Pentane		1		EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	6.02 E-04	2.63 E-0	
Phenanathrene		1		EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	3.93 E-09	1.72 E-0	
Propane		1		EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	3.70 E-04	1.62 E-0	
Pyrene		1		EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	1.16 E-09	5.07 E-0	
Selenium		1		EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	5.55 E-09	2.43 E-0	
Toluene		1		EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	7.87 E-07	3.45 E-0	
Vanadium		1		EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	5.32 E-07	2.33 E-06	
Zine		l		EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	6.71 E-06	2.94 E-0	

- 1 Emission factor for "Smail Boilers" and "Uncontrolled".
 2 Potential hours of operation of boiler (annual) =
 3 Actual hours of operation of boilers (all year) = 385 days/year x 14 hours/day =
 5,110 hours/year to identifier #835.

Abbreviations used::

MMBtu Million Btu
hr Hours
yr Years

Ib_E Pounds of emissions
ton_E Tons of emissions

Emissions ISU Small Equip 6/24/2003 B35 1 of 1 @2:57PM Syed

Item #37: Boller #4 HP4

Emission Estimates Fuel: Natural Gas

Date: 20-Dec-04

Computer Model Identifier: HP4

Location: Heat Plant - Building #20

Equipment EM33KNS		Maximum 6	gulpment	Emission Factors from EPA 42:			following estimates based on Emission Factors	
		Capacity ³		Entreeler Foods and Color of the				
	Fuel	Ĺ		Reference Table		calculated	calculated	calcula
		1 souter	MMBWhr					
Boiler 4	Ges	60,000	72.44		lb _e /10° scf	ro _e /MMBtu	lb _e /tw	ton
co		1		EPA 42 Table 1.4-1	84	0.082	6.00 E+00	1 97 E
140 ₄		1 1		EPA 42 Table 1.4-1	50	0 049	3 57 E+00	1 17 €
so.		1 1		EPA 42 Table 1 4-2	0.60	0.00059	4.28 E-02	1.40 €
PM10		1 i		EPA 42 Table 1 4-2	7.60	0.0075	5.43 E-01	1.78 E
PM		1 1	i	EPA 42 Table 1.4-2	7.60	0.0075	5.43 E-01	1.78 E
Po		l 1		EPA 42 Table 1.4-2	0.0005	4.90 E-07	3.57 E-05	1 17 8
voc		1 1		EPA 42 Table 1.4-2	5.50	0.005	3.93 E-01	1 29 E 2.57 E
TOC		1 1		EPA 42 Table 1.4-2	11.00	0.011 2.35 E-08	7.96 E-01 1.71 E-06	5 61 8
2-Methylnaphthalone		1 1		EPA 42 Table 1.4-3	2.4 E-05 1.8 E-08	1.76 E-09	1.29 E-07	4.21
3-Methylchloranthrene		ιι		EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	1.6 E-06	1.57 E-08	1.14 E-08	374
,12-Dimethylbenz(a)anthracite		1 1		EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1 29 €-07	4.21
Acenaphthene Acenaphthylene		1 1		EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.29 E-07	4.21
Arthracene		1 I		EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	1.71 E-07	5.61
Arsenic		1 1		EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	1.43 E-05	4.66
Berlum		1 1		EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	3.14 E-04	1.03
Benzo(a)anthracene		1 1		EPA 42 Table 1.4-3	1.8 €-06	1.76 E-09	1.29 E-07	4.21
Benzene		1 1		EPA 42 Table 1.4-3	2.1 €-03	2.06 E-06	1.50 E-04	4.91
Benzo(a)pyrene		l I		EPA 42 Table 1.4-3	1 2 E-06	1.18 E-09	8.57 E-08 1.29 E-07	2.81 4.21
Benzo(b)fluoranthene		1 1		EPA 42 Table 1.4-3	1.8 E-06 1.2 E-08	1.76 E-09 1.18 E-09	8.57 E-08	281
Senzo(g,h,i)peryiene		1 1		EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.29 E-07	4.21
Benzo(k)fluoranthene		1 1		EPA 42 Table 1.4-3 EPA 42 Table 1.4-4	1.0 E-00	1.18 E-08	8.57 E-07	2.81
βery∰um		1 I		EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	1.50 E-01	4.91
Butane Cadmium		1 1		EPA 42 Table 1.4-4	1.1 €-03	1.08 E-06	7,86 €-05	2.57
Chromkum		1 1		EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	1.00 E-04	3.28
Chrysene		1 1		EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.29 E-07	4.21
Cobalt		1 1		EPA 42 Table 1.4-4	8.4 E-05	8.24 E-06	6.00 E-06	1.97
Copper				EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	6.07 E-05	1.99
Dibenzo(a,h)anthracene		1 1		EPA 42 Table 1.4-3	1,2 E-06	1.18 E-09	8.57 E-08	2.81
Dichlorobenzene		1 1		EPA 42 Table 1.4-3	1.2 E-03	1.18 E-08	8.57 E-06	7.25
Ethane		1 1		EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03 2.94 E-09	2.21 E-01 2.14 E-07	7.02
Fluoranthene		l l		EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	3.0 E-06 2.6 E-06	2.75 E-09	2.00 €-07	8.55
Fluorene		1 1		EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	5.36 E-03	1.75
Formaldehyde Hexane		1		EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	1.29 E-01	4.21
Indeno(1,2,3-cd)pyrane		1 1		EPA 42 Table 1.4-3	1.8 E-06	1,76 E-09	1.29 E-07	4.21
Manganese		1 1		EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	2.71 E-05	8.89
Mercury		1		EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	1.86 E-05	6.08
Methane		, ,		EPA 42 Table 1.4-2	2.30	0.00225	1.84 E-01	5.38
Malybdenum		1 1		EPA 42 Table 1.4-4	1.1 €-03	1.08 E-06	7.86 E-05 4.36 E-05	2.57
Naphthalene		1 1		EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07 2.06 E-06	1.50 E-04	4.91
Nickel))		EPA 42 Table 1.4-4 EPA 42 Table 1.4-3	2.1 E-03 2.6 E+00	2.66 E-03	1.86 E-01	6.06
Pentane		1		EPA 42 Table 1.4-3 EPA 42 Table 1.4-3	1.7 E-05	1.67 E-06	1.21 E-06	3.98
Phenanathrene		1		EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	1.14 E-01	3.74
Propane Pyrene		1 1		EPA 42 Table 1.4-3	5.0 E-06	4.90 E-08	3.57 E-07	1,17
Selenium		1 1		EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	1.71 E-06	5.61
Toluene		1 1		EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	2.43 E-04	7.95
Vanadium		, ,		EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	1.64 E-04	5.38
Zinc				EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	2.07 E-03	6.78

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Notes:

1 Emission factor for "Small Boilens", "Controlled - Low NQ, burners".

2 Hours of operation of boiler (treating season: Sept 1 to May 31) = 273 days/year x 24 hours/de 6,552 hours/year).

3 Primary operating fluid in Natural Gies, and secondary (backup) fluid = 82 Of From boiler specifications: design, heat input = 72.84 MM/Bruhr (gas), and 69.63 MM/Bruhr (oil).

4 Computer Model Identifier: HE4:

5 Sack Parameter(in) = 39.00

7 Stack Cameter (ii) = 30.00

8 Exit temperature (F) = 323

9 Exit temperature (F) = 323

9 Exit temperature (F) = 323

10 UTM X Coordinate (m) = 21,000

11 UTM X Coordinate (m) = 383,968

11 UTM Y Coordinate (m) = 4,745,897

12 Biase elevation (m) = 1,386-2

Abbreviations used:

Name Pounds of steam

MMBU Jakion Biss

In Hours

yr Years

Reg Pounds of emissions

Ione Tone of emissions
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Tab name: HP4-Natural Ges File name: Emissions ISU May2006 Print date: 5/26/2005 1:29 PM Page #36 of 36 Syed